

PATENT #34

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
(Case No. 98,162)

In re Application of:

DeGendt, et al.

Serial No.: 09/022,834

Filed: February 13, 1998

For: Method for Removing Organic  
Contaminants from a  
Semiconductor Surface

Group Art Unit: 1765

Examiner: S. Ahmed

TRANSMITTALCommissioner for Patents  
Washington, D.C. 20231

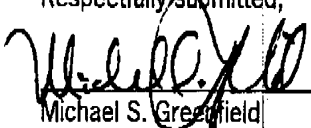
Dear Sir:

In regard to the above-identified patent application:

1. We are transmitting herewith the attached **SUPPLEMENTAL RESPONSE TO OFFICE ACTION MAILED AUGUST 12, 2002** (2 pages).
2. With respect to additional fees, applicants believe no additional fees are due.
3. Please charge any additional fees or credit overpayments to the Deposit Account No. 13-2490. A duplicate copy of this sheet is enclosed.
4. CERTIFICATE OF MAILING (37 C.F.R. 1.8a): I hereby certify that this correspondence is being deposited with the United States Postal Service via facsimile to the Commissioner for Patents, Washington D.C. 20231, fax no. 703-872-9055, on April 28, 2003.

Respectfully submitted,

Date: April 28, 2003

  
Michael S. Greenfield  
Registration No. 37,142Telephone: 312-913-0001  
Facsimile: 312-913-0002**McDonnell Boehnen Hulbert & Berghoff**  
300 South Wacker Drive, 32nd Floor  
Chicago, IL 60606

PATENT

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SUPPLEMENTAL RESPONSE TO OFFICE ACTION MAILED AUGUST 12, 2002Commissioner for Patents  
Washington, D.C. 20231

Dear Sir:

Applicants submit this supplemental reply in response to the Office Action mailed August 12, 2002. While maintaining the right to re-submit their previous arguments for patentability over the cited art, the applicants hereby withdraw them and instead rely solely on the following basis for patentability over the cited art because it is sufficient to establish the non-obviousness of the present claims.

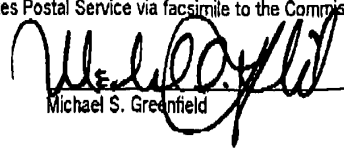
The essence of the outstanding rejections over the prior art is that it would have been obvious to add a scavenger to an ozone-in-water solution for removing organic materials from wafers. The applicants respectfully disagree.

As evidence of the non-obviousness of the present claims, the applicants draw the Examiner's attention to the experiments disclosed on pages 16-18 of the present specification (entitled "Application 2"). These experiments present a comparative study of the cleaning efficiency of aqueous ozone with and without the scavenger acetic acid and are the sort of experiments described in MPEP § 716.02(a). Cleaning data are presented for un-implanted positive and negative resist wafers as well as for implanted positive resist wafers.

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Michael S. Greenfield

The reported data demonstrate that an aqueous ozone solution containing the scavenger acetic acid enhanced cleaning efficiency of implanted wafers by 50% relative to an aqueous ozone solution not containing acetic acid - 90 nm/min for an acetic acid-containing aqueous ozone solution compared to only 60 nm/min for an aqueous ozone solution without acetic acid. Page 17, ll. 30-32.

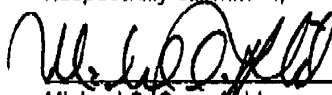
The specification also reports on p. 17, l. 33, to p. 18, l. 5 and depicts in figure 9 that the addition of the scavenger acetic acid to an aqueous ozone solution enhanced the cleaning efficiency of the solution by up to 50% on un-implanted negative resist wafers (1.2 nm/(min-ppm) for the acetic acid-containing ozone solution compared to only 0.8 nm/(min-ppm) for the aqueous ozone solution without acetic acid) and up to 88% on un-implanted positive resist wafers (8.5 nm/(min-ppm) for the acetic acid-containing ozone solution compared to only 4.5 nm/(min-ppm) for the aqueous ozone solution without acetic acid).

The applicants respectfully submit that the cited art does not teach or suggest that such a high degree of improvement in cleaning efficiency of a semiconductor surface by an aqueous ozone solution as observed by the applicants could be achieved by adding a scavenger to the solution. Consequently, the presently pending claims are not obvious over the cited art.

In view of the foregoing the applicants respectfully request reconsideration and withdrawal of all pending § 103 rejections.

If there are any questions or comments regarding this response or application, the Examiner is encouraged to contact the undersigned.

Respectfully submitted,



Michael S. Greenfield  
Registration No. 37,142

Date: April 28, 2003

Telephone: 312-913-0001  
Facsimile: 312-913-0002

**McDonnell Boehnen Hulbert & Berghoff**  
300 South Wacker Drive, 32nd Floor  
Chicago, IL 60606